PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Assistant Commissioner for Patents
United States Patent and Trademark Office
Box PCT
Washington, D.C.20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacit, as elected Office

Date of mailing 02 December 1999 (02.12.99)	
International application No.: PCT/CZ98/00025	Applicant's or agent's file reference:
International filing date: 25 May 1998 (25.05.98)	Priority date:
Applicant: JIRSÁK, Oldr^¿ich et al	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International preliminary Examining Authority on:

22 October 1999 (22.10.99)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

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1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer:

J. Zahra

Telephone No.: (41-22) 338.83.38

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REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference *(if desired) (12 characters maximum)*

Box No. I TITLE OF INVENTION A Device for Perpendicular Stratification of Planary Fibrous Shapes

Box No. II APPLICANT

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)*

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Karla Čapka 22
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☐ This person is also inventor.

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Facsimile No.

Teleprinter No.

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State *(i.e. country)* of residence: CZ

This person is applicant for the purposes of: ☐ all designated States ☒ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)*

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This person is:

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☐ applicant and inventor

☒ inventor only *(If this check-box is marked, do not fill in below.)*

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State *(i.e. country)* of residence: CZ

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: ☒ agent ☐ common representative

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

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Continuation of Box No. III [redacted]RTHER APPLICANTS AND/OR (FURTHER) INV[redacted]ORS

If none of the following sub-boxes is used, this sheet is not to be included in the request.

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)*

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This person is applicant for the purposes of:
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- [X] the United States of America only
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Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)*

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This person is:
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- [ ] applicant and inventor
- [X] inventor only *(If this check-box is marked, do not fill in below.)*

State *(i.e. country)* of nationality:

State *(i.e. country)* of residence:

This person is applicant for the purposes of:
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This person is:
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- [ ] applicant and inventor
- [X] inventor only *(If this check-box is marked, do not fill in below.)*

State *(i.e. country)* of nationality: CZ

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This person is applicant for the purposes of:
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- [X] the United States of America only
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Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)*

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This person is:
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- [ ] applicant and inventor
- [X] inventor only *(If this check-box is marked, do not fill in below.)*

State *(i.e. country)* of nationality: CZ

State *(i.e. country)* of residence: CZ

This person is applicant for the purposes of:
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Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) *(mark the applicable check-boxes; at least one must be marked)*:

Regional Patent

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- ☐ LT Lithuania
- ☐ LU Luxembourg
- ☐ LV Latvia
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- ☐ MN Mongolia
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- ☐ PL Poland
- ☐ PT Portugal
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- ☐ SE Sweden
- ☐ SG Singapore
- ☐ SI Slovenia
- ☐ SK Slovakia
- ☐ SL Sierra Leone
- ☐ TJ Tajikistan
- ☐ TM Turkmenistan
- ☒ TR Turkey
- ☐ TT Trinidad and Tobago
- ☐ UA Ukraine
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- ☒ US United States of America .....
- ☐ UZ Uzbekistan
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Check-boxes reserved for designating States (for the purposes of a national patent) which have become party to the PCT after issuance of this sheet:

- ☐ .....
- ☐ .....
- ☐ .....

In addition to the designations made above, the applicant also makes under Rule 4.9(b) all designations which would be permitted under the PCT except the designation(s) of _____.

The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. *(Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)*

See Notes to the request form

Box No. VI PRIORITY CLAIM Further priority claims are indicated in the Supplemental Box ☐

The priority of the following earlier application(s) is hereby claimed:

Country (in which, or for which, the application was filed)	Filing Date (day/month/year)	Application No.	Office of filing (only for regional or international application)
item (1)			
item (2)			
item (3)			

Mark the following check-box if the certified copy of the earlier application is to be issued by the Office which for the purposes of the present international application is the receiving Office (a fee may be required):

☐ The receiving Office is hereby requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) identified above as item(s) : _____

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) *(If two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):* ISA / _____

Earlier search *Fill in where a search (international, international-type or other) by the International Searching Authority has already been carried out or requested and the Authority is now requested to base the international search, to the extent possible, on the results of that earlier search. Identify such search or request either by reference to the relevant application (or the translation thereof) or by reference to the search request:*

Country (or regional Office): Date *(day/month/year)*: Number:

Box No. VIII CHECK LIST

This international application contains the following number of sheets:

1. request	: 4	sheets
2. description	: 6	sheets
3. claims	: 1	sheets
4. abstract	: 1	sheets
5. drawings	: 1	sheets
Total	: 13	sheets

This international application is accompanied by the item(s) marked below:

1. [X] separate signed power of attorney
2. [ ] copy of general power of attorney
3. [ ] statement explaining lack of signature
4. [ ] priority document(s) *identified in Box No. VI as item(s):*
5. [ ] fee calculation sheet
6. [ ] separate indications concerning deposited microorganisms
7. [ ] nucleotide and/or amino acid sequence listing (diskette)
8. [ ] other *(specify)*:

Figure No. _____ of the drawings (if any) should accompany the abstract when it is published.

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

Ing. Krčma Radko
Jirsák Oldřich
Hanuš Jaroslav
Kotek Václav
Sanetrník Filip

Kubíčková Květoslava

Radko Krčma

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1. Date of actual receipt of the purported international application:	2. Drawings: ☐ received: ☐ not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:	
4. Date of timely receipt of the required corrections under PCT Article 11(2):	
5. International Searching Authority specified by the applicant: ISA /	6. ☐ Transmittal of search copy delayed until search fee is paid

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Date of receipt of the record copy by the International Bureau:

PATENT COOPERATION TREATY

PCT

REC'D 10 FEB 2000

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
-		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/CZ98/00025	25/05/1998	25/05/1998
International Patent Classification (IPC) or national classification and IPC D04H11/04		
Applicant I.N.T., KRCMA RADKO et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
22/10/1999	08. 02. 00
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Lanniel, G Telephone No. +49 89 2399 2062

Form PCT/IPEA/409 (cover sheet) (January 1994)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/CZ98/00025

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-6 as originally filed

Claims, No.:

1-3 as originally filed

Drawings, sheets:

1/1 as originally filed

2. The amendments have resulted in the cancellation of:

☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-3
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-3
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-3
	No:	Claims	

2. Citations and explanations

see separate sheet

The invention relates to a device for perpendicular stratification of planary fibrous shapes which have a minimum of rotating parts, an easy setting of back position of vibrating elements when adjusting the machine for processing various types of goods directly on the shaft tie-rods and a possibility of easy change of the amplitude of vibrating elements directly on the driving mechanism.
This result is achieved with a device such that the two elements making synchronous and reciprocating motions are connected with the driving mechanism indirectly over at least one shaft rigidly fitted in bearings in the framework of the machine, one of the element being coupled to the shaft rigidly or over flexible joints and the second element being coupled by means of flexible joints.
None of the cited documents discloses nor suggests such a device, having at least a shaft on which the element are connected as claimedand which is intermediate between the lements and the driving mechanism.

PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : D04H 11/04	A1	(11) International Publication Number: WO 99/61693
		(43) International Publication Date: 2 December 1999 (02.12.99)

(21) International Application Number: PCT/CZ98/00025

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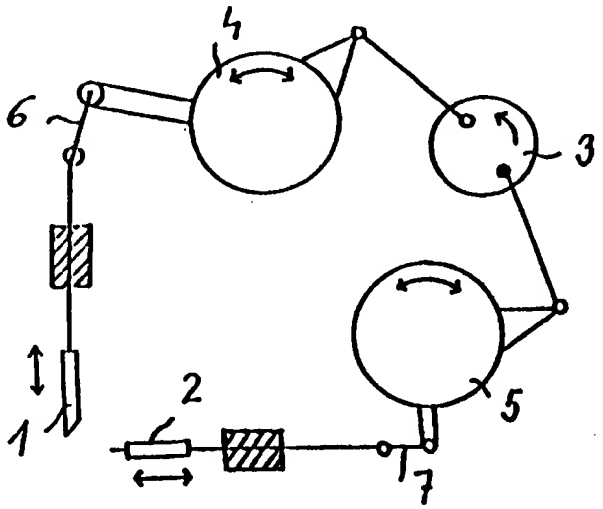
(81) Designated States: AU, BR, CA, ID, IL, JP, KR, TR, US, ZW, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published
With international search report.

(54) Title: A DEVICE FOR PERPENDICULAR STRATIFICATION OF PLANARY FIBROUS SHAPES

(57) Abstract

A device for perpendicular stratification of planary fibrous shapes, above all of fibrous web, comprising two synchronously moving elements, connected with the driving mechanism according to the invention consists in that the reciprocating moving elements (1, 2) are connected with their driving mechanism (3) indirectly by the intermediary of at least one robust shaft (4) rigidly fitted in bearings in a rigid framework of the machine, while one element (1) is connected with the shaft (4) rigidly or over flexible joints (6), and a second element (2) is coupled by means of flexible joints (7) with the same shaft or with another shaft. The driving mechanism (3) can consist of one driving shaft (8) with two crank assemblies (9) arranged with a phase shift to each other. The flexible joints (6 and 7) consist of flat steel springs with a width–to–thickness ratio more than 10.



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A Device for Perpendicular Stratification of Planary Fibrous Shapes

The scope of the patent is a device for production of voluminous shapes by perpendicular stratification of planary fibrous shapes, above all of fibrous web from a carding machine.

Description of the Prior Art

For the production of webbing from a web as obtained from machines with carding effect substatially three basic principles are known and used, based on parallel, cross or perpendicular web stratification. The method of the fibrous layer preparation and the related fibre orientation in the layer has a deciding importance for the product properties. In the case of voluminous products, which are exposed in their application to a single, repeated or longlasting stress, the best properties are obtained by preparing the fibrous layer by perpendicular stratification of the web. Under most variable conditions such products best retain their functional properties, especially as fillers or thermal insulants.

Several types of equipment working on rotational or vibration principle are known in the production of a fibrous layer composed of fibres laid substantially perpendicularly to the product plane.

Perpendicular laying devices on rotational principle form the web by means of various types of rotating elements such as gear wheels, cylinders with pins or rotating disks with specially shaped indents between which the web is fed. A merit of such systems protected e.g. by CZ AO 273997 is their high performance and a wide range of perpendicularly laid produced webbing. A limitation is their limited possibility of controlling the fibre position at various specific densities of the web, and a heterogenous structure of product surface. A deviation of fibre orientation from a perpendicular orientation to the layer surface makes the compressing resistance of the product decline. Rotating elements of the laying device such as e.g. a system of wires, formed disks or indentations produce a row-like structure, connected with an irregular density of fibre distribution in the product area.

Vibration laying devices work on the principle of shaping the fed web by a forming batten with an eventual upholding of shaped plaits by a thrust batten. The machines working on this principle are known in various arrangements, and are mostly adapted to the requirements on the product properties. So e.g. according to the US Patent 2.638960 a device consists of a horizontally vibrating cheek which in compressed condition feeds the web or a yarn system onto a base layer and in the back position the thrust batten presses the material in the form of a loop to the base layer with an adhesive.

According to CZ P 37 619 the web fed horizontally is bent by vertically situated battens from upside and from downside. The web fibres are attached from upside as well as from downside to the base layers. CZ P 56 029 describes a device in vertical arrangement, in which the fed web is plaited between a pair of conveyor belts by a pair of battens rocking in reciprocating movements against each other. By attachement of adhesive-coated base layer fabrics fed from both sides a configuration resembling a double plush is formed. A kind of modification thereof is a device described in CZ P 87 556, in which the web fed from upside is taken over and deposited on an adhesive-coated fabric by a pair of alternately working battens in the form of a doffer comb. According to CZ AO 235494 the web from the carding machine is formed on the base directly on the doffing point at the outlet drum of the carder. In this method the positions of the formed plaits are not fixed, so that the product can hardly be transferred to the equipment for chemical or mechanical stiffening. All described mechanisms require to attach the perpendicularly shaped webbing to the base fabric by an adhesive immediately when forming individual plaits, otherwise the structure shaped here is unstable and does not permit to apply known methods of mechanical or adhesion stiffening.

A certain progress in this trend was brought in a device according to CZ AO 269 300 and the related Patent Application PV 1819-92. The web fed to the device from upside is formed in plaits by a vibrating fly comb and individual plaits are pressed to a fibrous layer built up between a conveyor belt and a grid by a synchronously vibrating batten.

The driving mechanism of the shaping elements which must exert a highly demanding and accurate motion, is solved according to PV 1819-92 by a four-joint assembly, featuring two groups of tie-rods driving the two vibrating elements - the fly comb and the batten. The light functional vibrating elements proper are directly connected to assemblies converting a circular motion to a reciprocating motion. A high stress of the assemblies converting the circular motion to a recirpocating motion generates shock forces and causes a vibration of working elements (fly comb, batten). Both shafts are interconnected by sets of three gear-wheels. Though the mechanism provides for a synchronous drive of both working elements, it permits, however, owing to a complicated setup and a considerable mass of the equipment, even in a carefully balanced condition an oscillation frequency merely up to 600 cycles per minute. Such capacity is far from satisfying the needs of modern carding machines, with which the laying device is incorporated into the production line. Said heavy mass of individual components according to this concept leads in a continuous uninterrupted operation to an accelerated wear of the gear-wheels, pins and bearings and consequently to a shorter life expectancy of the machine. With continuing operation time the noise level is gradually increased and the product becomes less uniform. Another consequence thereof is an uneven shaping of individual web plaits with an increasing frequency.

The vibrating elements must be coupled together with the prime mover by a number of joints, the distance from each other depending on the machine frequency required and on the bending rigidity of working elements. Any frequency increase requires therefore an increase in the number of joints and consequently of gear-wheels or of the mass of vibrating elements. Both said possibilities result in an increased overall mass of moving parts of the machine and make any further increase of the working frequency impossible.

Nature of the invention

The limitations mentioned above are remedied by a device for perpendicular stratification of planary fibrous shapes with two synchronously vibrating elements according to the invention. The vibrating elements are connected with the driving

member indirectly by the intermediary of one or two robust shafts, rigidly fitted in bearings in a rigid machine framework. The vibrating elements are connected with the shaft(s) directly or by means of a set of flexible joints in sliding fitting. The flexible joints can consist of flat steel springs with a width-to-thickness ration higher than 10, but also of tie rods, having sliding fitting and flexible knuckle joints. The flexible joints with sliding fitting permit to convert a circular motion of the driving prime mover and of the massive shaft into a linear reciprocating motion of vibrating elements.

The mechanism can comprise a driving shaft with two crank assemblies fitted with a phase shift between each other. The shafts are driven by the driving mechanism synchronously so that they make a reciprocating motion around their longitudinal axes. Owing to its large diameter and high rigidity, the shaft (possibly a tube) transmitting a reciprocating motion, does not vibrate under the influence of the forces transmitted onto it by the driving mechanism. Thus the shaft transmits to the working element a motion which is evenly distributed along its whole width without generating any unwanted vibration. The merit of the device is in that it prevents any vibration of working elements even at the necessary high operating speed owing to the connection of said elements with rigidly seated shafts by means of a set of resilient joints, own mass of which is substatially smaller as compared with known transmission members. Such device is able to work at a frevency of 2000 cycles per minute. This is a frequency, permitting to process fibrous web with a speed corresponding to the speed of modern carding machines.

Other advantages of the device according to the invention are a high life expectancy at a minimum maintenance demand, a minimum of rotating parts, on which any fibres or web can be wound-on, an easy setting of back position of vibrating elements when adjusting the machine for processing various types of goods directly on the shaft tie-rods, a possibility of easy changing the amplitude of vibrating elements directly on the driving mechanism.

Seting of the phase shift for the vibration motion of the functional members is necessary for a safe web doffing from the doffer comb working edge. This

enables an accurate plait shaping, which is a must for obtaining a smooth surface and an even product density.

Survey of figures in the drawings

Fig. 1 shows schematically a device for perpendicular stratification of planary fibrous shapes with one single shaft.

Fig. 2 shows schematically a device for perpendicular stratification of planary fibrous shapes with two shafts and one vibrating element in sliding fitting and a second vibrating element in rigid fitting.

Fig. 2a shows schematically a driving mechanism.

Fig. 3 shows schematically a device for perependicular stratification of planary fibrous shapes with two shafts and vibrating elements in sliding fitting.

Examples of embodiment

Example 1

A device shown in Fig. 1 serves for processing of a fibrous layer, e.g. fibrous web coming from a carding machine. It consists of two vibrating elements 1 and 2 for perpendicular stratification of web. Said elements 1 and 2 are connected over a shaft 4 and connecting rod 10 with knuckle joint 11 and a driving mechanism 3. The shaft 4 makes a rotating and reciprocating motion along its longitudinal axis. The shaft 4 is a robust tube having an outer diameter 701 mm and is rigidly fitted in bearings in a rigid framework of the machine. The vibrating element 1 is rigidly connected with the shaft 4, the element 2 is joined by means of tie-rods 7 with sliding fitting and flexible knuckle joints.

The vibrating element 2 takes over the fibrous web by means of a set of needles from the element 1 and shapes a plait, which is then pressed to the fibrous layer on the conveyor belt.

The device is suitable for the production of a fibrous layer in which the fibres are oriented predominantly perpendicular towards the fabric plane.

Example 2

A device shown in Fig. 2 consists of two vibrating elements 1 and 2 as in Fig. 1. The element 1 is connected with a driving mechanism 3 over a shaft 4 and the element 2 over a shaft 5 by means of tie-rods 7 with sliding fitting and flexible knuckle joints. The driving mechanism 3 shown in Fig. 2a consists of a driving shaft 8 with two crank shafts 9. The crank shafts are set up to allow advanced phase movement of one of vibrating elements.

In comparison with Example 1, due to the advanced phase movement of vibrating element 2, the processed fiber layer is better taken off the vibrating element 1. Therefore the folds are more regular and the fabric of smooth surface is produced..

Example 3

A device in Fig. 3 consists of the same elements as in Example 2, both the vibrating elements 1 and 2 are linked with shafts 4 and 5 by means of tie-rods 6 and 7 with sliding fitting and flexible knuckle joints.

The advantage of the device is the straight-lined movement of both vibrating elements 1 and 2 which does not cause air turbulence and vibrations of the fed in carded web. It leads to improved regularity of final fabric.

Example 4

A device as in Example 3, the flexible knuckle joints 6 and 7 are replaced with steel springs. Due to this the mass of links and dynamic loading of driving mechanism is reduced and the life of device improved.

Utilization of the device

The device for perpendicular stratification of planary fibrous shapes is utilizable namely in the textile industry.

Patent claims

What we claim is:

1. A device for perpendicular stratification of planary fibrous shapes, above all a fibrous web, with two elements making synchronous and reciprocating motions and connected with a driving mechanism, characterized in that the elements (1,2) exerting a reciprocating motion are connected with the driving mechanism (3) indirectly over at least one robust shaft (4) rigidly fitted in bearings in a rigid framework of the machine, while one element (1) is coupled to the shaft (4) rigidly or over flexible joints (6), and a second element (2) is coupled by means of flexible joints (7) with the same shaft or with another shaft (5).

2. A device according to Claim 1, characterized in that the driving mechanism (3) consists of one driving shaft (8) with two crank assemblies (9) arranged with a phase shift to each other.

3. A device according to Claims 1 and 2 characterized in that the flexible joints (6) and (7) consist of flat steel springs with width-to thickness ratio more than 10.

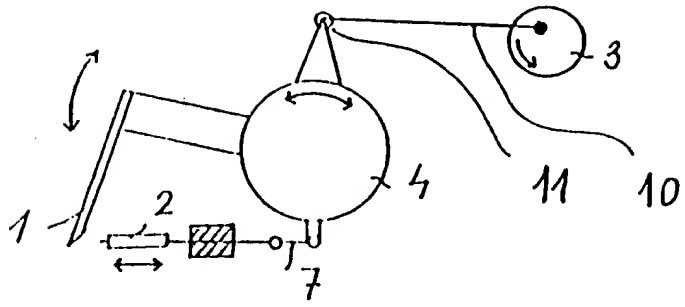
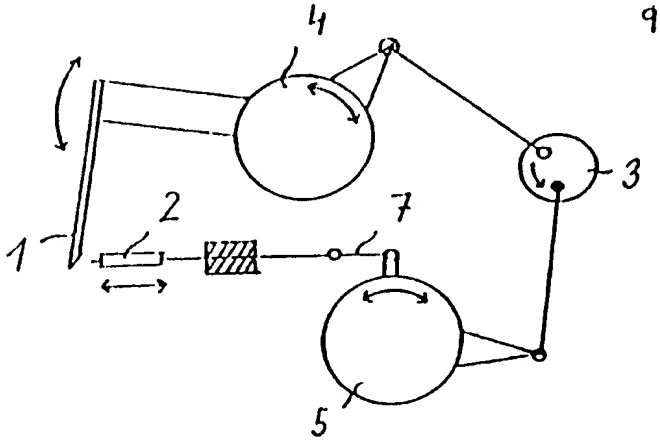


Fig. 1



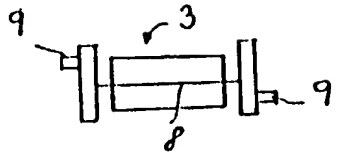


Fig. 2a

Fig. 2

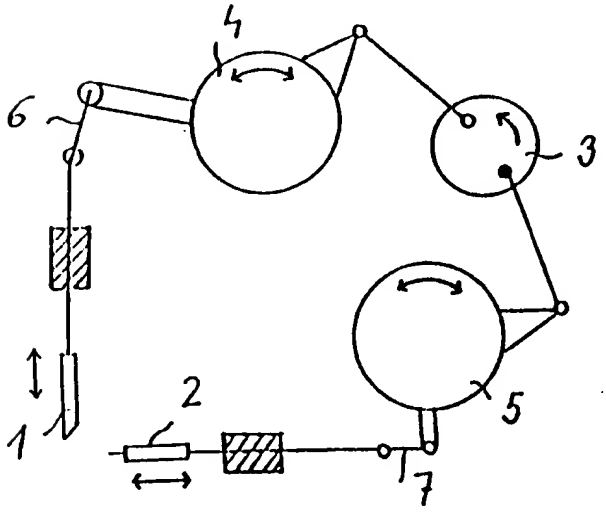


Fig. 3

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	**FOR FURTHER ACTION** see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/CZ 98/ 00025	International filing date *(day/month/year)* 25/05/1998	(Earliest) Priority Date *(day/month/year)*
Applicant I.N.T., KRCMA RADKO et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language,** the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

   [ ] the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

   b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

   [ ] contained in the international application in written form.

   [ ] filed together with the international application in computer readable form.

   [ ] furnished subsequently to this Authority in written form.

   [ ] furnished subsequently to this Authority in computer readble form.

   [ ] the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   [ ] the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. [ ] **Certain claims were found unsearchable** (See Box I).

3. [ ] **Unity of invention is lacking** (see Box II).

4. With regard to the **title,**

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 3

   [ ] as suggested by the applicant.

   [X] because the applicant failed to suggest a figure.

   [ ] because this figure better characterizes the invention.

   [ ] None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/CZ 98/00025

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 D04H11/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 D04H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2 638 959 A (JOHNSON) 19 May 1953 see column 3, line 61 - column 5, line 4	1
A	GB 2 222 835 A (STODDARD SEKERS INT) 21 March 1990 see claim 1; figure 1	1
A	US 3 010 508 A (WILSON ET AL.) 28 November 1961 see claim 1	1

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
1 April 1999	12/04/1999

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	V Beurden-Hopkins, S

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/CZ 98/00025

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2638959 A	19-05-1953	NONE	
GB 2222835 A	21-03-1990	US 5110397 A	05-05-1992
US 3010508 A	28-11-1961	NONE	